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## The botanical work of the government.

JOHN M. COULTER.

The amount of botanical work that has been undertaken by the national government is perhaps unknown to all except those who come in direct contact with it. Thinking that such information would not only be of interest to botanists in general, but would also be of service to the work itself, the chiefs of the various divisions were asked to furnish the following information, which was given very promptly and courteously. At present four distinct divisions of botanical work are organized under the Department of Agriculture, although other divisions also do a certain amount of work that may be fairly called botanical.

I. DIVISION OF BOTANY. The total appropriation for the Division of Botany for the year ending June 30, 1895, is \$38,600. The appropriation made for the year ending June 30, 1896, is \$33,800, the new Division of Agrostology having been separated from the Division of Botany, as indicated below. The employees who are engaged in strictly scientific work, exclusive of those engaged in semi-technical, editorial and clerical work, and the temporary field agents, who are employed only during the collecting season, are as follows:

*Mr. Frederick V. Coville* (Cornell University), as chief of the division, is engaged principally in its administrative work but is also doing some monographic and local botanical work on plants of eastern Washington and eastern Oregon.

*Mr. J. N. Rose* (Wabash College), as assistant botanist and honorary assistant curator, has general charge of the herbarium, makes the majority of critical miscellaneous identifications, and is also engaged in working upon collections of Mexican plants.

*Mr. L. H. Dewey* (Mich. Agric. College) is engaged upon investigations of weeds, collating information of all kinds regarding them; and combining this information into form for popular use.

*Mr. G. H. Hicks* (Mich. Agric. College; Univ. of Michigan) has charge of the pure seed investigations of the Division, maintaining and adding to the collection of seeds, and

testing commercial samples with reference to their purity and germinative capacity.

*Mr. C. L. Pollard* (Columbia College) is acting as assistant curator of the herbarium, and is engaged at present in numbering specimens already mounted, distributing newly mounted material, and arranging the plants properly upon the shelves.

*Mr. A. G. Pieters* (Mich. Agric. College; Cornell Univ.) is acting as an assistant of Mr. Hicks, and is engaged particularly in making germination tests of commercial seed.

*Mr. V. K. Chesnut* (Univ. of Calif.; Univ. of Chicago) is engaged upon an investigation, both pharmacological and physiological, of poisonous and medicinal plants.

*Mr. Marcus E. Jones* (Iowa College) is engaged in working up a report on the collection of plants made by him in southern Utah and northern Arizona during the season of 1894.

Messrs. Scribner, Kearney and Smith are also connected with this Division until July 1, but their work will be mentioned in connection with the new Division of Agrostology.

The work of the Botanical Division during the coming year will in the main be an amplification of the lines of work already under way, and possibly the assumption of one or two additional investigations.

2. DIVISION OF VEGETABLE PHYSIOLOGY AND PATHOLOGY. It will be noted that "Physiology" has been added to the title of this Division by the last Congress, enabling work which had already been begun to be prosecuted upon a broader basis, and recognizing the fact that in the study of diseased plants the normal life processes must first be understood before the diseased organism can be studied intelligently. The appropriation for the year ending June 30, 1895, was \$26,100; for the year ending June 30, 1896, it is \$26,300. The care of the extensive collection, correspondence and system of indexing is shared by all the staff at Washington. The laboratory investigations are conducted at Washington, Eustis (Fla.) and Santa Ana (Calif.), and are in charge of the following staff:

*Mr. B. T. Galloway* (University of Missouri), as Chief of the Division, has charge of the administrative work, general direction of all investigations, and edits all bulletins and reports. In such time as is left to him, he is investigating the conditions affecting the health of plants under glass, and also one or two groups of fungi.

*Mr. Albert F. Woods* (University of Nebraska), Assistant Chief, is engaged in an investigation of the growth of potatoes as affected by spraying with Bordeaux mixture, it having been found that the effect is wholly distinct from that resulting from the prevention of insect and fungus attacks, often causing an increased yield of from 30 to 50 per cent.

*Mr. Erwin F. Smith* (University of Michigan) is a student of peach yellows and bacterial diseases, and is now continuing his investigations of the melon diseases, especially those prevailing in the south.

*Mr. M. B. Waite* (University of Illinois) is investigating diseases of pomaceous fruits and is now studying pear blight, chiefly with reference to the effect of different fungicides, the effect of different degrees of heat and cold, and is making bacteriological studies of insects found on the pear or known to visit it.

*Mr. W. T. Swingle* (Kansas Agric. College), stationed at Eustis, Florida, is studying the diseases of citrus fruits and other subtropical plants, and is now investigating the blight, die-back, sooty mold and scab of the orange and other citrus fruits.

*Mr. H. J. Webber* (University of Nebraska) is associated with Mr. Swingle in these studies.

*Mr. Newton B. Pierce* (University of Michigan), stationed at Santa Ana, California, is investigating the diseases of the grape and other fruits on the Pacific Coast.

*Mr. M. A. Carleton* (Kansas Agric. College) is investigating the diseases of cereals, especially the rusts and smuts.

*Mr. Theo. Holm* (University of Copenhagen) has charge of anatomical work, is now examining the anatomy of galls, and will soon take up a study of the anatomy of cultivated wheats in relation to rust-resisting qualities.

*Mr. Joseph F. James* has charge of the herbarium, and also general supervision of the index work.

*Mr. P. H. Dorsett* (University of Missouri) has charge of field work with fungicides.

Nearly all of this staff are also interested in various groups of lower plants, but no attempt is made to push this work to the front. Primarily the work is on the physiology and pathology of plants in relation to agriculture, purely systematic studies being secondary.

3. DIVISION OF AGROSTOLOGY. This is a new division

established by the last Congress, but the act does not go into effect until the first of July. Until that time the work is a part of that of the Division of Botany. The function of the new division, which deals with forage plants as well as grasses, is to instruct and familiarize the people with the habits and uses of these plants, to conduct investigations relative to their natural history and adaptability to different soils and climates, to introduce promising native and foreign kinds into cultivation, to identify all grasses and forage plants sent in for identification, and reply to all correspondence relative to these plants. For this work \$15,000 has been appropriated, and the following staff has been provided:

*Professor F. Lamson-Scribner*, Chief of the Division. Professor Scribner is now engaged in the preparation of a Handbook of the Grasses of the United States, in which it is designed to describe and illustrate all of our species of grasses. The illustrations thus far prepared are of the highest order of excellence.

*Mr. T. H. Kearney, Jr.* (Univ. of Tennessee; Columbia College), is assisting Professor Scribner on the Handbook.

*Mr. Jared G. Smith* (Univ. of Nebraska) will have direct charge of the outside work of the Division.

4. DIVISION OF FORESTRY. This Division is in a somewhat different position from all other Divisions in that they deal with existing interests, while the Forestry Division has still to create an interest in its subject. Besides scientific investigations, therefore, a considerable amount of propaganda work is carried on and the scientific work has until lately been rather on uncertain lines and desultory. Within the last three years, however, a more definite policy in this respect has been inaugurated and systematic work is carried on, having in view the laying of a theoretical basis for future forestry practice.

*Mr. B. E. Fernow*, as Chief of the Division, has charge of the administrative work, and also is very actively engaged in arousing and organizing public sentiment in favor of a rational forestry policy.

*Mr. Chas. A. Kieffer* (Iowa Agric. College) is Assistant Chief, and in addition to his official duties is charged with all questions relating to western tree planting, and especially with conducting a series of forest planting experiments in co-operation with agricultural experiment stations in Kansas, Nebraska, the Dakotas and Colorado.

*Mr. Geo. B. Sudworth* (Univ. of Michigan) has charge of the strictly botanical work, identifying all species, and answering economic questions of adaptation of species to climate and soils.

*Dr. Charles Mohr* is a field agent, who has not only collected material for timber test work, but has also prepared monographs on the southern coniferous trees of commercial value.

*Mr. Austin Cary* (Bowdoin College) is also a field agent, who has been engaged on tree measurements to establish the rate of growth and wood production of various species, notably the black spruce in Maine and New Hampshire, and the white and Norway pine in Michigan and Wisconsin.

The main work of the Division for the last three years has been in the line of "timber physics," *i. e.*, the study of the character and value of the wood of our merchantable species. For this purpose logs and disk pieces are collected with care of the various species from the various localities and soil conditions in which they occur; the two field agents, Dr. Mohr and Mr. Cary, having done most of the collecting. The log material goes to the Testing Laboratory of the Washington University of St. Louis, where it is subjected to various tests systematically under the direction of Mr. J. B. Johnson, the professor of engineering in the University. The physical examination is in charge of Mr. Filibert Roth (Univ. of Michigan).

The monographs of Professor Spalding on the white pine, Professor Prentiss on the hemlock, Professor Flint on *Pinus resinosa* and *P. rigida*, and Miss Kate Furbish on *Picea nigra*, still await publication.

Such is a bare outline of the botanical work carried on by the Department of Agriculture, but it will serve to show its general scope. It will also serve to direct inquiry concerning various subjects to the proper sources of information, and indicate in many cases the proper destination of material.

*Lake Forest, Ill.*